The listing of claims will replace all prior versions and listing of claims in the application:

Listing of Claims

Claim 1. (currently amended) The method for deriving an electrical output from solar radiation, comprising the steps of:

(a) providing a serially coupled multijunction photovoltaic cell having, a series connected array of junction unit cells with a stack orientation, a multijunction defined edge illumination receiving surface, said stack orientation being at a stack angle with respect to said receiving surface equivalent to Brewster's angle, an electrical output derivable at terminals and formed of impurity doped photovoltaic material exhibiting a given bandgap energy at a bandgap energy wavelength and a wavelength defined band of useful energy extending below said bandgap energy wavelength;

(b) ~~concentrating said solar radiation within a concentration light path;~~ providing an imaging primary concentrator;

(c) ~~removing components of solar energy at said concentration light path corresponding with at least a portion of those wavelengths substantially ineffective to evoke said cell electrical output to derive a corrected concentration light path;~~ concentrating said solar radiation within a concentration light path with said imaging concentrator;

(d) ~~directing said corrected concentration light path in an impinging direction upon said cell edge illumination receiving surface effective to permit generation of said electrical output; and~~ removing components of solar energy at said concentration light path corresponding with at least a portion of those wavelengths above said bandgap energy wavelength;

(e) ~~coupling said terminals with a load.~~ providing a non-imaging internally reflecting secondary concentrator having a centrally disposed axis, an entrance of given dimensional extent located to receive said concentration light path, having an exit adjacent said receiving surface of dimensional extent less than said given dimensional extent and having one or more sloping internally reflecting surfaces effective to homogenize light within said concentration light path while

directing light in an impinging direction toward said cell edge illumination receiving surface effective to permit generation of said electrical output; and

(f) coupling said terminals with a load.

Claim 2. (currently amended) The method of claim 1 in which said ~~multijunction photovoltaic cell as have a said stack orientation disposed at a stack angle less than 90° with respect to said receiving surface.~~ step (d) removes components of solar energy from said concentration light path by effecting a frequency shift thereof.

Claim 3. (currently amended) The method of claim 2 in which said ~~step (a) provides said stack angle is generally equivalent to Brewster's angle.~~ frequency shift is carried out with luminescence, phosphorescence or fluorescence.

Claim 4. (currently amended) The method of claim 1 in which said step ~~(c)~~ (d) is carried out with a dichroic device removing solar energy corresponding with wavelengths greater than said bandgap energy wavelength.

Claim 5. (original) The method of claim 1 in which said step (a) wavelength defined band of useful energy extends from said bandgap energy wavelength to about one-half said bandgap energy wavelength.

Claim 6. (currently amended) The method of claim 1 in which said step ~~(c)~~ (d) is carried out with a dichroic device removing solar energy corresponding with wavelengths below said wavelength defined band of useful energy.

Claims 7 and 8 (canceled)

Claim 9. (currently amended) The method of claim ~~7~~ 1 in which:

said step (b) is carried out with a mirror implemented primary concentrator reflecting solar radiation to define said concentration light ~~path; and~~ path.

~~said step (d) directs said corrected concentration light path with a secondary concentrator having a centrally disposed axis, an entrance of given~~

~~dimensional extent located to receive said corrected concentration light path, an exit adjacent said edge illumination receiving surface of dimensional extent less than said given dimensional extent, and having a sloping internally reflecting surface characteristic effective to progressively angularly reflect said corrected concentration light path to an extent at least effecting five or more internal reflections.~~

Claim 10. (canceled)

Claim 11. (currently amended) The method of claim 1 in which:

~~said step (b) is carried out with a mirror implemented primary concentrator reflecting solar radiation;~~

~~said step (d) includes the step:~~

~~(d1) providing a secondary concentrator having a centrally disposed axis, an entrance of given dimensional extent located to receive said concentration light path, an exit adjacent said edge, illumination receiving surface of dimensional extent less than said given dimensional extent and having a sloping internally reflecting surface effective to progressively angularly reflect light impinging thereon to effect its homogenization; and~~

said step ~~(c)~~ <u>(e)</u> is at least partially carried out by providing said internally reflecting surface as a dichroic device.

Claim 12. (currently amended) The method of claim ~~11~~ <u>1</u> in which said step ~~(d)~~ <u>(e)</u> secondary concentrator sloping internal reflecting surface ~~characteristic~~ is provided as an inwardly depending logarithmically defined surface.

Claim 13. (currently amended) The method of claim ~~11~~ <u>1</u> in which said step ~~(d)~~ <u>(e)</u> secondary concentrator sloping internal surface is provided as an inwardly sloping surface having a slope angle of about 7° to about 12° with respect to said centrally disposed axis.

Claims 14 and 15 (canceled)

Claim 16. (original) The method of claim 1 in which:

said step (b) is carried out with a spherical mirror implemented primary concentrator imaging solar radiation as a coma of light distribution, and a coma corrector lens imaging said coma of light distribution at an image focal point defining said concentration light path.

Claim 17. (currently amended) The method of claim ~~7~~ 1 in which:

said step (b) is carried out with an etalon mirror implemented primary concentrator reflecting solar radiation to an image point defining said concentration light ~~path; and~~ path.

~~said step (d) directs said corrected concentration light path to impinge light upon said cell edge illumination receiving surface at a substantially uniform intensity by providing said etalon mirror with one or more substantially flat reflective surfaces.~~

Claim 18. (currently amended) The method of claim 1 in which:

said step (a) provides more than one said multijunction photovoltaic cell each said cell being formed of a unique photovoltaic material exhibiting a unique bandgap energy wavelength and a unique wavelength defined band of useful energy;

said step ~~(c)~~ (d) removes components of solar energy corresponding with wavelengths greater than said unique bandgap energy wavelength with respect to each said cell to derive more than one unique ~~corrected~~ concentration light path; and

said step ~~(d)~~ (e) directs each said unique ~~corrected~~ concentration light path to impinge upon the illumination receiving surface of a corresponding unique cell.

Claim 19. (currently amended) The method of claim 18 in which:

said step (a) provides one said multijunction photovoltaic cell as a stacked germanium junction cell exhibiting a germanium wavelength defined band of useful energy; and

provides another said multijunction photovoltaic cell as a stacked silicon junction cell exhibiting a silicon bandgap energy wavelength generally at a

lower terminus of said germanium band of useful energy and having a wavelength defined silicon band of useful energy;

said step ~~(c)~~ (d) is carried out with a first dichroic device removing solar energy corresponding with wavelengths greater than said germanium bandgap energy wavelength to derive a ~~corrected~~ germanium concentration light path; and

with a second dichroic device removing solar energy corresponding with wavelengths substantially extending from said silicon bandgap energy wavelength to said germanium bandgap energy wavelength to derive a ~~corrected~~ silicon concentration light path; and

said step ~~(d)~~ (e) diverts said corrected germanium concentration light path to the edge illumination receiving surface of said germanium junction cell; and

directs said corrected silicon concentration light path to the edge illumination receiving surface of said silicon junction cell.

Claim 20. (currently amended) The method of claim 18 in which:

said step (a) provides one said multijunction photovoltaic cell as a stacked silicon junction cell exhibiting a silicon bandgap energy wavelength and wavelength defined silicon band of useful energy, and

provides another said multijunction photovoltaic cell as a stacked gallium arsenide cell exhibiting a gallium arsenide bandgap energy wavelength generally at the terminus of said silicon band of useful energy and having a wavelength defined gallium arsenide band of useful energy;

said step ~~(c)~~ (d) is carried out with a first dichroic device, removing solar energy corresponding with wavelengths greater than said silicon bandgap energy wavelength to derive a ~~corrected~~ silicon concentration light path, and

with a second dichroic device removing solar energy corresponding with wavelengths substantially extending from said gallium arsenide bandgap energy wavelength to said silicon bandgap energy wavelength to derive a ~~corrected~~ gallium arsenide concentration light path; and

said step ~~(d)~~ (e) directs said ~~corrected~~ silicon concentration light path to the edge illumination receiving surface of said silicon junction cell, and

directs said ~~corrected~~ gallium arsenide concentration light path to the edge illumination receiving surface of said gallium arsenide junction cell.

Claim 21. (currently amended) The method of claim 1 in which:

said steps (b) and ~~(c)~~ (d) are carried out with a concentrator mirror assembly configured with ~~diachronic~~ dichroic components effective to remove said components ~~substantially ineffective to evoke said cell electrical output.~~ of solar energy.

Claim 22. (currently amended) The method for deriving an electrical output from solar radiation, comprising the steps of:

(a) providing a series-connected ~~array of~~ multijunction photovoltaic ~~cells~~ cell having an illumination receiving surface, a derivable electrical output, ~~each cell of said array~~ exhibiting a given bandgap energy at a bandgap energy wavelength and a wavelength defined band of useful energy extending below said bandgap energy wavelength;

(b) ~~concentrating said solar radiation within a concentration light path;~~ providing an imaging concentrator;

(c) ~~removing components of solar energy from said concentration light path corresponding with at least a portion of those wavelengths substantially ineffective to evoke said cell electrical output to derive a corrected concentration light path; and~~ imaging said solar radiation with said primary concentrator to an image focal point within a concentration light path;

(d) ~~directing said corrected concentration light path in an impinging direction toward said receiving surface effective to derive said electrical output.~~ providing a non-imaging internally reflecting secondary concentrator having a centrally disposed axis, an entrance of given dimensional extent located to receive said concentration light path at said focal point, having an exit adjacent said receiving surface of dimensional extent less than said given dimensional extent and having one or more sloping internally reflecting surfaces effective to homogenize light within said concentration light path while internally directing light in an impinging direction toward said receiving surface to derive said electrical output; and

(e) removing components of solar energy from said concentration light path corresponding with at least a portion of those wavelengths above said bandgap energy wavelength.

Claim 23. (currently amended) The method of claim 22 in which said step (a) provides[~~:~~] said multijunction photovoltaic cell ~~each said cell of said array of cells~~ as a back surface point contact cell device.

Claim 24. (currently amended) The method of claim 22 in which said step (a) provides:

said ~~array of cells~~ multijunction photovoltaic cell as a series connected stacked array of junction cells with a stack orientation, ~~and~~ said receiving surface is a multijunction defined edge illumination receiving surface[[.]] and said stack orientation is at a stack angle with respect to said edge illumination receiving surface equivalent to Brewster's angle.

Claim 25. (currently amended) The method of claim 24 in which said step ~~(a) provides: said stacked array of junction cells stack orientation at a stack angle less than 80º with respect to said edge illumination receiving surface.~~ (d) removes components of solar energy from said concentration light path above said bandgap energy wavelength by effecting a frequency shift thereof.

Claim 26. (currently amended) The method of claim 25 in which said ~~stack angle is generally equivalent to Brewsters angle.~~ frequency shift is carried out with luminescence, phosphorescence or fluorescence.

Claim 27. (currently amended) The method of claim 22 in which said step ~~(c)~~ (e) is carried out with a dichroic device removing solar energy corresponding with wavelengths greater than said bandgap energy wavelength.

Claim 28. (original) The method of claim 22 in which said step (a) wavelength defined band of useful energy extends from said bandgap energy wavelength to about one-half said bandgap energy wavelength.

Claims 29 and 30 (canceled)

Claim 31. (currently amended) The method of claim ~~30~~ 22 in which said step ~~(d1)~~ (d) is carried out with a prism.

Claim 32. (currently amended) The method of claim 30 in which:

said step (b) is carried out with a mirror implemented primary concentrator reflecting solar radiation to define said concentration light ~~path; and~~ path.

~~said step (d1) is carried out by directing said corrected concentration light path with a non-imaging secondary concentrator having a centrally disposed axis, an entrance of given dimensional extent located to receive said corrected concentration light path, an exit adjacent said receiving surface of dimensional extent less than said given dimensional extent and having a sloping internally reflecting surface effective to progressively internally reflect said corrected concentration light path to effect its homogenization.~~

Claim 33. (currently amended) The method of claim ~~32~~ 22 in which said step ~~(d1)~~ (d) sloping internal reflecting surface is provided as an inwardly depending logarithmically defined surface.

Claim 34. (currently amended) The method of claim ~~32~~ 22 in which said step ~~(d1)~~ (d) secondary concentrator sloping internal surface is provided as an inwardly sloping surface having a slope angle of about 7° to about 12° with respect to said centrally disposed axis.

Claim 35. (currently amended) The method of claim 22 in which:

~~said step (b) is carried out with a mirror implemented primary concentrator reflecting solar radiation;~~

~~said step (d) includes the step:~~

~~(d2) providing a secondary concentrator having a centrally disposed axis, an entrance of given dimensional extent located to receive said concentration light path, an exit adjacent said receiving surface of dimensional extent less than said given dimensional extent and having a sloping internally reflecting surface effective to progressively angularly reflect light impinging thereon to effect its homogenization; and~~

said step ~~(c)~~ (e) is at least partially carried out by providing said internally reflecting surface of said secondary concentrator as on a dichroic device.

Claim 36. (currently amended) The method of claim 35 in which said step ~~(d1)~~ (d) sloping internal reflecting surface is provided as an inwardly depending logarithmically defined surface.

Claim 37. (currently amended) The method of claim 35 in which said step ~~(d1)~~ (d) secondary concentrator sloping internal surface is provided as an inwardly sloping surface having a slope angle of about 7° to about 12° with respect to said centrally disposed axis.

Claim 38. (original) The method of claim 22 in which:

said step (b) is carried out with a spherical mirror implemented primary concentrator imaging solar radiation as a coma of light distribution, and a coma corrector lens imaging said coma of light distribution at an image focal point defining said concentration light path.

Claim 39 (canceled)

Claim 40. (currently amended) The method of claim 22 in which:

said step (a) provides more than one said ~~series-connected array of photovoltaic cells,~~ multijunction photovoltaic cell, each said ~~array~~ cell being formed of a unique photovoltaic material exhibiting a unique bandgap energy wavelength and a corresponding unique wavelength defined band of useful energy;

said step ~~(c)~~ (d) removes components of solar energy effective to substantially match said unique bandgap energy wavelength and corresponding unique wavelength defined band of useful energy to derive corresponding unique ~~corrected~~ concentration light paths; and

said step ~~(d)~~ (c) directs each said unique corrected concentration light path to the receiving surface of a corresponding unique ~~array.~~ cell.

Claim 41. (currently amended) The method of claim 40 in which:

said steps (b) and ~~(c)~~ (e) are carried out by providing more than one primary concentrator component, each comprising a transparent mirror component with a unique reflective dichroic component.

Claim 42. (original) The method of claim 41 in which said step (b) is carried out with more than one transparent Fresnel lens component having parabolic concentrator attributes.

Claim 43. (original) The method of claim 42 in which:

said step (b) is carried out with more than one forwardly disposed transparent Fresnel pattern having a given concentrator configuration each having a corresponding rearwardly disposed transparent and complementary pattern configuration effective to support said unique reflective dichroic component in mirror defining relationship with a corresponding said forwardly disposed transparent Fresnel pattern.

Claim 44. (original) The method of claim 41 in which said step (b) is carried out with more than one transparent parabolic mirror.

Claim 45. (currently amended) The method of claim 41 in which said steps (b) and ~~(c)~~ (e) provide said more than one primary concentrator components in mutually spaced ~~relationship. to effect a corresponding mutual separation of said unique corrected concentration light paths.~~ relationship.

Claims 46 and 47 (canceled)

Claim 48. (withdrawn) A system for deriving an electrical output from solar radiation, comprising:

a primary concentrator mirror reflectively responsive to said solar radiation and effecting the intensity concentration thereof:

a series-connected array of photovoltaic cells having an illumination receiving surface, each cell of said array exhibiting a given bandgap energy at a bandgap energy wavelength and a wavelength defined band of useful photon energy extending below said bandgap energy wavelength.

a corrector component responsive to treat and remove ineffective wavelength defined solar energy components from said intensity concentration of

solar radiation to an extent effecting a substantial match of said concentrated solar radiation with said wavelength defined band of useful photon energy; and

a homogenizer component responsive to direct un-imaged corrector component treated radiation to impinge upon said illumination receiving surface with substantially uniform intensity.

Claim 49. (withdrawn) The system of claim 48 in which said array of photovoltaic cells comprises:

a series connected stacked array of junction cells with a stack orientation, said receiving surface being a multijunction defined edge illumination receiving surface, and said stack orientation being at a stack angle less than 90° with respect to said edge illumination receiving surface.

Claim 50. (currently amended) The ~~method~~ system of claim 49 in which said stack angle is generally equivalent to Brewster's angle.

Claim 51. (currently amended) The ~~method~~ system of claim 48 in which:

said homogenizer comprises a prism.

Claim 52. (withdrawn) The system of claim 48 in which said homogenizer component comprises:

a secondary concentrator having a centrally disposed axis, an entrance of given dimensional extent located to receive solar radiation from said primary concentrator mirror, an exit adjacent said receiving surface of dimensional extent less than said given dimensional extent and having a sloping internally reflecting surface effective to progressively internally reflect impinging thereon.

Claim 53. (withdrawn) The system of claim 52 in which said secondary concentrator is configured to effect five or more internal reflections.

Claim 54. (withdrawn) The system of claim 52 in which said secondary concentrator internally reflecting surface is an inwardly depending logarithmically defined surface.

Claim 55. (withdrawn) The system of claim 52 in which said secondary concentrator sloping internally reflecting surface comprises an inwardly sloping surface having a slope angle of about 7° to about 12° with respect to said centrally disposed axis.

Claim 56. (withdrawn) The system of claim 52 in which at least a portion of said corrector component is incorporated with said secondary concentrator internally reflecting surface.

Claim 57. (withdrawn) The system of claim 48 in which at least a portion of said corrector component is incorporated with said primary concentrator mirror.

Claim 58. (withdrawn) The system of claim 48 further comprising:

one or more unique additional series connected arrays of photovoltaic cells, each said array being formed of a unique photovoltaic material exhibiting a unique bandgap energy wavelength and a corresponding unique wavelength defined band of useful energy;

said corrector component is further responsive to remove ineffective wavelength defined solar energy components from said intensity concentration of solar radiation to an extent effecting a substantiated match of said concentrated solar radiation with each said unique wavelength defined band of useful energy; and

said homogenized component is responsive to direct said matched concentrated solar radiation to the receiving surface of a corresponding unique additional series connected array of photovoltaic cells.

Claim 59. (withdrawn) The system of claim 48 in which:

said primary concentrator is configured as a Fresnel mirror having a lower edge and a rearward surface; and

further comprising:

a solar tracking primary concentrator mount including a circular, horizontally disposed support rail assembly, a carriage assembly mounted for rotational movement upon said support rail assembly; and

said Fresnel mirror lower edge being mounted for pivotal movement upon said carriage assembly between a substantially upright orientation and a substantially horizontal orientation.

Claim 60. (new) The method for deriving an electrical output from solar radiation, comprising the steps of:

(a) providing a multijunction photovoltaic cell having an illumination receiving surface, a derivable electrical output, exhibiting a given bandgap energy at a bandgap energy wavelength and a wavelength defined band of useful energy extending below said bandgap energy wavelength to about one-half said bandgap energy wavelength;

(b) providing an etalon mirror primary concentrator having one or more flat reflective surfaces effective to concentrate said solar radiation within a concentration light path at a generally uniform intensity;

(c) removing components of solar energy from said concentrator light path corresponding with at least a portion of those wavelengths above said bandgap energy wavelength ineffective to evoke said cell electrical output; and

(d) directing said concentration light path in an impinging direction toward said receiving surface effective to derive said electrical output.